

WE CLAIM:

1. An implantable system for delivering fluid to a body including:
  - a first catheter;
  - a second catheter, where one end of the first catheter is configured to be received within one end of the second catheter, wherein when the first and second catheters are connected the second catheter receives the first catheter along an overlap area;
  - a collar with a first opening configured to encircle the first catheter and a second opening configured to encircle the second catheter, wherein the first opening is smaller than the second opening, wherein the collar is configured to surround at least a first portion of the overlap area of the first and second catheters; and
  - a clamp for applying a radially inward force to the collar to hold the first and second catheters together, wherein the clamp encircles at least a portion of the overlap area.
2. The system of claim 1 further comprising an access device configured to establish fluid communication with the second catheter, the access device comprising:
  - a reservoir having an open top and a closed bottom,
  - a pierceable and resealable septum received in the open top, and
  - an outlet tube in fluid communication with the reservoir, wherein the outlet tube is configured to be received within one end of the second catheter.
3. The system of claim 1 wherein the clamp moves between a first open position and a second locked position, wherein in the open position the clamp can receive an end of the second catheter and wherein in the closed position the clamp applies the radially inward force to the overlap area, wherein the clamp locks into the closed position.
4. The system of claim 3 wherein the clamp includes interlocking teeth that maintain the clamp in the closed position.

5. The system of claim 1 wherein the clamp comprises:
  - a pair of spaced jaws including a first jaw and a second jaw, the first jaw including teeth; and
  - a tongue configured to be inserted between the spaced jaws when the clamp is in the closed position, the tongue including teeth to mesh with the teeth on the first jaw.
6. The system of claim 1 wherein the collar includes a recessed area for receiving the clamp.
7. The system of claim 1 wherein the collar defines a distal cavity adjacent to the first opening and a proximal cavity adjacent to the second opening, wherein the distal and proximal cavities are cylindrical cavities, wherein the distal hollow cavity has a diameter smaller than a diameter of the proximal cavity.
8. The system of claim 1 wherein the collar defines a proximal cavity adjacent to the second opening and encircled by the clamp, wherein the first portion of the overlap area is positioned within the proximal cavity, the connector further comprising a collet within the proximal cavity, wherein the collet is configured to surround at least the first portion of the overlap area of the first and second catheter, wherein the collet is more rigid than both the first and second catheters, wherein the collet further surrounds a portion of the first catheter that does not overlap with the second catheter.
9. The system of claim 8, wherein the collet comprises:
  - a ring portion encircling an open passage; and
  - four panels extending from the ring portion, the four panels defining four open areas between the four panels.
10. The system of claim 9, wherein the first and second openings of the collar are axially aligned.

11. The system of claim 10 further comprising a sleeve extending from the first opening, wherein the sleeve is configured to surround the first catheter for a sleeved portion of the first catheter, wherein the sleeve has an outer diameter larger than an outer diameter of the first catheter.
12. The system of claim 11 wherein the sleeved portion is about two to six inches long.
13. The system of claim 11 wherein the sleeve outer diameter is at least about 50% larger than the first catheter outer diameter.
14. The system of claim 13 wherein the sleeve outer diameter is at least about twice as large as the first catheter outer diameter.
15. The system of claim 11 wherein the sleeve includes a flared lip portion at one end, wherein the lip portion is configured to engage an end wall of the proximal cavity within the collar.
16. The system of claim 1 further comprising a sleeve extending from the first opening, wherein the sleeve is configured to surround the first catheter for a sleeved portion of the first catheter, wherein the sleeve has an outer diameter larger than an outer diameter of the first catheter.
17. The system of claim 16 wherein the sleeved portion is about two to six inches long.
18. The system of claim 17 wherein the sleeve outer diameter is at least about 50% larger than the first catheter outer diameter.

19. The system of claim 18 wherein the sleeve outer diameter is at least about twice as large as the first catheter outer diameter.

20. The system of claim 16 wherein the sleeve includes a flared lip portion at one end, wherein the lip portion is configured to engage an end wall of the proximal cavity within the collar.

21. A connector for connecting a first catheter and a second catheter, where one end of the first catheter is configured to be received within one end of the second catheter, wherein when the first and second catheters are connected the second catheter receives the first catheter along an overlap area, comprising:

a collar with a first opening configured to encircle the first catheter and a second opening configured to encircle the second catheter, wherein the first opening is smaller than the second opening, wherein the collar is configured to surround at least a first portion of the overlap area of the second catheter; and

a clamp for applying a radially inward force to the collar to hold the first and second catheter together, wherein the clamp encircles at least a portion of the overlap area.

22. The connector of claim 21 wherein the clamp moves between a first open position and a second locked position, wherein in the open position the clamp can receive an end of the second catheter and wherein in the closed position the clamp applies the radially inward force to the overlap area, wherein the clamp locks into the closed position.

23. The connector of claim 21 wherein the clamp comprises:

a pair of spaced jaws including a first jaw and a second jaw, the first jaw including teeth; and

a tongue configured to be inserted between the spaced jaws when the connector is in a closed position, the tongue including teeth to mesh with the teeth on the first jaw.

24. The connector of claim 21 wherein the collar includes a recessed area for receiving the clamp.

25. The connector of claim 21 wherein the collar defines a proximal cavity adjacent to the second opening and encircled by the clamp, wherein the first portion of the overlap area is positioned within the cavity, the connector further comprising a collet within the cavity, wherein the collet is configured to surround at least the first portion of the overlap area of the first and second catheter, wherein the collet is more rigid than both the first and second catheters, wherein the collet further surrounds a portion of the first catheter that is not within the overlap area.

26. The connector of claim 25, wherein the collet comprises:  
a ring portion encircling an open passage; and  
four panels extending from the ring portion, the four panels defining four open areas between the four panels.

27. The connector of claim 26, wherein the first and second openings of the collar are axially aligned.

28. The connector of claim 27 further comprising a sleeve extending from the first opening, wherein the sleeve is configured to surround the first catheter for a sleeved portion of the first catheter, wherein the sleeve has an outer diameter larger than an outer diameter of the first catheter.

29. The connector of claim 28 wherein the sleeved portion is about two to six inches long.

30. The system of claim 28 wherein the sleeve includes a flared lip portion at one end, wherein the lip portion is configured to engage an end wall of the proximal cavity within the collar.

31. The connector of claim 21, wherein the clamp provides a sealing contact between the first and second catheter.

32. A connector for connecting a first catheter and a second catheter, where one end of the first catheter is configured to be received within one end of the second catheter, wherein when the first and second catheters are connected the second catheter receives the first catheter along an overlap area, wherein the first catheter is a fluid delivery catheter configured to enter a body lumen at an incision site, the connector comprising:

a collar with a first opening for encircling the first catheter and a second opening for encircling the second catheter, wherein the collar is configured to surround at least a first portion of the overlap area of the second catheter; and

a clamp for applying a radially inward force to the collar to hold the first and second catheter together; and

a sleeve encircled by the first opening of the collar and configured to surround the first catheter for a portion of the length of the first catheter extending from the first opening of the collar, wherein the sleeve has an outer diameter larger than an outer diameter of the first catheter, wherein the sleeve is configured to extend along the first catheter into the incision site.

33. The connector of claim 32 wherein the sleeve is at least about 2 inches long.

34. The connector of claim 32 wherein the sleeve outer diameter is at least about 50% larger than the first catheter outer diameter.

35. The system of claim 32 wherein the sleeve includes a flared lip portion at one end, wherein the lip portion is configured to engage an end wall of the proximal cavity within the collar.

36. An implantable system for delivering fluid to a body including:  
a first catheter;  
a second catheter, where one end of the first catheter is configured to be received within one end of the second catheter, wherein when the first and second catheters are connected the second catheter receives the first catheter along an overlap area;  
an access device configured to be connected to the second catheter, the access device comprising a reservoir having an open top and a closed bottom, a pierceable and resealable septum received in the open top, and an outlet tube in fluid communication with the reservoir, wherein the outlet tube is configured to be received within one end of the second catheter,  
a collar with a first opening configured to encircle the first catheter and a second opening configured to encircle the second catheter, wherein the first opening is smaller than the second opening, wherein the collar is configured to surround at least a first portion of the overlap area of the first and second catheters;  
a clamp for applying a radially inward force to the collar to hold the first and second catheters together, wherein the clamp encircles at least a portion of the overlap area, wherein the clamp moves between a first open position and a second locked position, wherein in the open position the clamp can receive an end of the second catheter and wherein in the closed position the clamp applies the radially inward force to the overlap area, wherein the clamp locks into the closed position, wherein the clamp includes interlocking teeth that maintain the clamp in the closed position; and  
a sleeve extending from the first opening, wherein the sleeve is configured to surround the first catheter for a sleeved portion of the first catheter, wherein the sleeve has an outer diameter larger than an outer diameter of the first catheter.

37. The system of claim 36 wherein the clamp comprises:  
a pair of spaced jaws including a first jaw and a second jaw, the first jaw including teeth; and  
a tongue configured to be inserted between the spaced jaws when the clamp is in the closed position, the tongue including teeth to mesh with the teeth on the first jaw.

38. The system of claim 36 wherein the collar includes a recessed area for receiving the clamp.

39. The system of claim 36 wherein the collar defines a distal cavity adjacent to the first opening and a proximal cavity adjacent to the second opening, wherein the distal and proximal cavities are cylindrical cavities, wherein the first hollow cavity has a diameter smaller than a diameter of the second cavity.

40. The system of claim 36 wherein the collar defines a cavity adjacent to the second opening and encircled by the clamp, wherein the first portion of the overlap area is positioned within the cavity, the connector further comprising a collet within the cavity, wherein the collet is configured to surround at least the first portion of the overlap area of the first and second catheter, wherein the collet is more rigid than both the first and second catheters.

41. The system of claim 36 wherein the collet further surrounds a portion of the first catheter that does not overlap with the second catheter.

42. A method of connecting a first catheter and a second catheter:  
providing a first catheter, a second catheter and a connector, the connector comprising a first opening, a second opening, a cavity adjacent to the second opening, a sleeve connected to the first opening, and a clamp, wherein the first catheter passes through the first and second openings of the connector;

positioning the first catheter within a body lumen through an incision site in the body lumen;

moving the connector relative to the first catheter so that the sleeve enters the incision site;

cutting off a proximal end of the first catheter near where the first catheter emerges from the second opening of the connector;



sliding the second catheter over the cut end of the first catheter and into the cavity of the connector; and

closing the clamp of the connector to apply a radially inward force to an overlap area of the first and second catheter to hold the first and second catheter together.